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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *19 June 2007*.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *47,48,50-56 and 58-72* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *47-48, 50-56 and 58-72* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's submission filed on 6/19/2007 has been entered. Claims 1-46, 49, and 57

have been canceled. Claims 47-48, 50-56 and 58-72 are pending in the application.

Response to Arguments

Applicant's arguments filed 6/19/2007 have been fully considered but are moot in view of

the new ground(s) of rejection of the claim 47.

As set forth below, the claim 47 is rejected under §103 as being unpatentable over

Strasnick et al. U.S. Pat. No. 5,861,885 (hereafter Strasnick) in view of DeKimpe et al. U.S.

Patent No. 6,665,682 (hereinafter DeKimpe) and Lokken U.S. Patent No. 6,167,396 (hereinafter

Lokken).

In Page 14 of Remarks, applicant argues that DeKimpe fails to disclose, teach or suggest

independent claim 47 limitations or the limitations set forth in the similar claims. The Examiner

respectfully disagrees with the applicant's arguments for the reasons discussed below.

In particular, applicant argues in essence that the cube disclosed in Dekimpe merely

illustrates the structure of the database, and does not include, involve, or even relate to a 'multi-

dimensional axes data hierarchy including a top layer hierarchy associated with a first axis

dimension. The examiner respectfully disagrees with the applicant argument. Dekimpe teaches

or suggests the claim limitations set forth in the claim 47 for the reasons given below.

In column 6, especially, column 6, lines 53-61, it is stated, "Drilling down or

up is a specific analytical technique whereby <u>the user navigates among levels of</u>

data ranging from the most summarized (up) to the most detailed (down). The

drilling paths may be defined by the hierarchies within dimensions or other

relationships that may be dynamic within or between dimensions. For example,

when viewing data for Sales 334 for the year 1997 304 in FIG. 3, a drill-down

operation in the Time dimension 302 would then display members Q1 366, Q2

308, Q3 310, and Q4 312."

DeKimpe discloses the drilling paths may be defined by the hierarchies within

dimensions. Having the hierarchies within dimensions means that there is a top layer hierarchy

for every dimension (axis) and therefore, there is a top layer level/hierarchy associated with a

third axis dimension. The cube of DeKimpe is only an example of the graphical representation of

the hierarchical data structures. DeKimpe teaches in column 6 that any dimension of the three-

dimensional hierarchical data has levels of data ranging from the most summarized (up) to the

most detailed (down) wherein drilling paths may be defined by the hierarchies within

dimensions.

DeKimpe not only discloses the hierarchies within dimensions but also discloses the

graphical user interface allowing a user to navigate among levels of data ranging from the most

summarized (up) to the most detailed (down).

In column 6 lines 21-52, DeKimpe discloses an example of the graphical representation

of the three-dimensional array of hierarchical data. It is stated, "The cube is three dimensional,

with each dimension (i.e., Time, Product, and Measures) represented by an axis of the

cube…Cubes generally have hierarchies or formula-based relationships of data within each

dimension (axis). Consolidation involves computing all of these data relationships for one or

more dimensions. An example of consolidation is adding up all sales in the first quarter. While

such relationships are normally summations, any type of computational relationship or formula

might be defined. Members of a dimension are included in a calculation to produce a

consolidated total for a parent member. Children may themselves be consolidated levels, which

requires that they have children." Thus, DeKimpe discloses the multi-dimensional axes data

hierarchy.

In Page 13 of Remarks, Applicant argues that Strasnick does not disclose, teach or

suggest independent claim 47 limitations or the limitations of similar claims, the Examiner

respectfully disagrees with applicant's arguments for the reasons discussed below.

In a non-limiting example, Strasnick thus clearly teaches in Fig. 7 and 14 and column 22

a top layer hierarchy (e.g., the product cells such as ALL for all products as the hierarchy is

controlled by the display control) associated with a first axis dimension (x-axis) and a top layer

hierarchy (ALL for a total of the first quarter, second quarter, third quarter and fourth quarter of

Sales data and the hierarchy is controlled by the display control; see column 22, lines 10-67; see

also column 16, lines 45-67 for the displayed objects along the y-axis dimension wherein the

displayed objects in the y-axis dimension are in the hierarchical structure) associated with a

second axis dimension (y-axis). Strasnick clearly discloses in Fig. 14 a three-dimensional

hierarchy of data structures in which the data objects are navigated and visualized in the three-

dimensional layout. Moreover, Strasnick discloses in column 21, lines 30-40 a hierarchical tree

structure of nodes in a 3D layout of the nodes/cells or data attributes in a hierarchy wherein the

nodes/cells/attributes of the hierarchical tree are distributed/mapped to the coordinates in the 3D

space and thus graphical structure has a top layer hierarchy associated with the x-axis in the 3D

space, a top layer hierarchy associated with the y-axis in the 3D space and a top layer hierarchy

associated with the z-axis in the 3D space (See Figs. 14-18).

Strasnick thus strongly suggests the claim limitation of a top layear hierarchy associated

with a third axis dimension (See Fig. 10A, 12A and 14-18).

Applicant argues that DeKimpe fails to disclose, teach or suggest independent claim 47

limitations or the limitations set forth in the similar claims. The Examiner respectfully disagrees

with the applicant's arguments for the reasons discussed below.

DeKimpe teaches the claim limitation of "a top layer hierarchy associated with a third

axis dimension." See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in

the multi-dimensional database along all dimensions and cubes have hierarchies of data within

each dimension. Members of a dimension are included in a calculation to produce **a**

consolidated total for a parent member. Children may themselves be consolidated levels,

which requires that they have children. A member may be a child for more than one parent, and a

child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple

hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a**

specific analytical technique whereby **the user navigate among levels of data ranging from**

the most summarized to the most detailed. The drilling paths may be defined by the

hierarchies within dimensions or other relationships that may be dynamic within or between

dimensions. For example, when viewing data for Sales 324 for the year 1997 304 in Fig. 3, **a**

drill-down operation in the Time dimension 302 would then display members Q1 366, Q2 308, Q3 310 and Q4 312.

DeKimpe thus discloses a computer graphical user interface system (Fig. 3 and column 6) comprising:

A database (DeKimpe Fig. 2 and column 6 wherein Fig. 2 discloses a multi-dimensional database) operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (Fig. 3 and column 6 and Fig. 2 discloses hierarchically organized data associated with a multi-dimensional hierarchy of data) and display the multi-dimensional hierarchy of data to a user (*Fig. 3 and column 6 and Fig. 2 discloses displaying the hierarchically organized data associated with a multi-dimensional hierarchy of data*); and

A multi-dimensional graphical user interface (Fig. 3 and column 6 discloses a graphical user interface for drilling down or up the multi-levels of the data structures) coupled to the database and capable of user interaction to provide a multi-dimensional user interactive graph comprising:

A multi-dimensional axes data hierarchy (Fig. 3 and column 6) including a top layer hierarchy (e.g., the ALL product item is a parent of the children products A, B, C) associated with a first axis dimension, a top layer hierarchy (e.g., the YEAR 1997 is the parent of its children Q1, Q2, Q3 and Q4) associated with a second axis dimension, and a top layer hierarchy (e.g., Measures is the parent of its children profits, costs and sales) associated with a third axis dimension; and a unique bottom layer hierarchy including a plurality of function values associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-

dimensional database along <u>all dimensions</u> and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within <u>any dimension</u> (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among levels of data ranging from the most summarized to the most detailed**. The drilling paths may be defined by the <u>hierarchies within dimensions</u> or other relationships that may be dynamic within or between dimensions); and

A multi-dimensional value hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels, which requires that they have children. A member may be a child for more than one parent, and a child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a specific analytical technique** whereby **the user navigate among levels of data ranging from the most summarized to the most detailed**. The drilling paths may be defined by the hierarchies within dimensions or other relationships that may be dynamic within or between dimensions).

In addition to the graphical representation of the multi-dimensional hierarchical data structure in DeKimpe column 6 and Fig. 3, further examples of the multi-dimensional hierarchies can be found in Lokken's OLAP database structure and the graphical representation for multi-level hierarchical data.

Lokken further discloses **a computer graphical user interface system comprising:**

A database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (*Lokken column 4, lines 21-39*) and display the multi-dimensional hierarchy of data to a user (*Figs. 3-4C and 16-17 or the data cube of column 5*); and

A multi-dimensional graphical user interface coupled to the database (*Lokken column 4, lines 15-20 and column 5, lines 1-10 disclosing the database 300 or the OLAP database 214; Fig. 3-4C and 16-17*) **and capable of user interaction to provide a multi-dimensional user interactive graph** (*Figs. 3-4C and 16-17 or the data cube of column 5*) **comprising: a multi-dimensional axes data hierarchy including a top layer hierarchy associated with a first axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 including the time YEAR or Quarter cells have the children cells such as the Month cells associated with the time dimension*), **a top layer hierarchy associated with a second axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11; Figs. 3-4C and 16-17 wherein the PRODUCTS line and family cells have children cells such as the Product Items associated with the product dimension*), **and a top layer hierarchy associated with a third axis dimension** (Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 wherein the Region layer has children cells such as the city, state and country cells associated with the Region dimension); **and a unique bottom layer hierarchy including a**

plurality of function values (*e.g., quantitative values in the space cube; see Lokken column 5,*

lines 1-11; see also Figs. 5-25) **associated with each of the top layer hierarchies of the multi-**

dimensional axes data hierarchy (*Figs. 3-4C and 16-17*); **and a multi-dimensional value**

hierarchy associated with each of the function values of the multi-dimensional axes data

hierarchy (*Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17*).

Applicant argues with respect to the claim 47 and similar claims that there is no

motivation for combining the references. However, the motivation can be found from the cited

references. It is clear from the cited references that one of the ordinary skill in the art is

motivated to have combined the references because this allows the multiple dimension visual

model being used to clearly present the data set to the user as organized in multiple levels along

the multiple axis with each member being labeled as the database contains a plurality of data

records having multiple data attributes/levels that need to be visualized at a plurality of levels to

reveal the details of the hierarchical structure of the data records (**Strasnick Figs. 14-18, column**

21-22, DeKimpe Figs. 2-3 and column 6).

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this

application because Figs. 1-24 are sketched by hand in poor quality. Applicant is advised to

employ the services of <u>a competent patent draftsperson</u> outside the Office, as the U.S. Patent and

Trademark Office no longer prepares new drawings. The corrected drawings are required in

reply to the Office action to avoid abandonment of the application. The requirement for corrected

drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 47-48, 50-54 and 67-68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 47 recites the new claim limitation of "a database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data and display the multi-dimensional hierarchy of data to a user". Applicant failed to particularly point out and distinctly claim the subject matter which applicant regards as the invention. While the claimed database can store the multi-dimensional hierarchy of data, the claimed database cannot display the multi-dimensional hierarchy of data, as opposed to a display screen displays the multi-dimensional hierarchy of data. Moreover, the software, when executed, is operable to display the data, rather than the database is operable to display the data.

The claims 48, 50-54 and 67-48 depend upon the claim 47 and are rejected due to their dependency on the claim 47.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims **55-56, 58-62 and 69-70** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 55-56, 58-62 and 69-70:

Claim 55 recites "Software for providing a computer graphical user interface". However, software or a computer program per se is neither computer components nor statutory process. See Diehr, 450 U.S. at 185-86, 209 USPQ at 8. See also, Ex Parte Lyell, 17 USPQ2d 1548 (Bd. Pat. App. & Inter. 1990). See also, MPEP 2173.05(p).

Although the claim 55 recites, "the software being embodied in a computer readable medium". Applicant's Specification lacks a disclosure of the claimed computer readable medium. A broadest reasonable interpretation is rendered herein. The claimed computer readable medium is not necessarily a computer readable storage medium. The term "computer readable medium" as used herein may refer to any transmission medium...examples of transmission media include radio or infra-red transmission channels as well as a network connection to another computer or networked device, and the Internet or Intranets including e-mail transmissions and information recorded on Websites and the like. Thus, applicant's computer readable medium includes radio signals. Radio signals are non-statutory subject matter.

Thus, claim 55 is non-statutory for the reasons discussed above.

Claim 56, 58-62 and 69-70 are non-statutory for the same reasons discussed above.

Computer-Related Nonstatutory Subject Matter

Descriptive material can be characterized as either "functional descriptive material" or

"nonfunctional descriptive material." In this context, "functional descriptive material" consists of

data structures and computer programs which impart functionality <u>when employed as a computer</u>

<u>component</u>. (The definition of "data structure" is "a physical or logical relationship among data

elements, designed to support specific data manipulation functions." The New IEEE Standard

Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive

material" includes but is not limited to music, literary works and a compilation or mere

arrangement of data.

<u>Both types of "descriptive material" are nonstatutory when claimed as descriptive material</u>

<u>per se. Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759</u>. See Warmerdam, 33 F.3d at 1361, 31

USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

<u>When nonfunctional descriptive material is recorded on some computer-</u>

<u>readable medium, in a computer or on an electromagnetic carrier signal,</u> <u>it is not</u>

<u>statutory</u> since no requisite functionality is present to satisfy the practical

application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract

ideas, stored in a computer-readable medium, in a computer, on an electromagnetic carrier signal

does not make it statutory. See Diehr, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims

for an algorithm in Benson were unpatentable as abstract ideas because "[t]he sole practical

application of the algorithm was in connection with the programming of a general purpose

computer."). Such a result would exalt form over substance. In re Sarkar, 588 F.2d 1330, 1333,

200 USPQ 132, 137 (CCPA 1978) ("[E]ach invention must be evaluated as claimed; yet

semantogenic considerations preclude a determination based solely on words appearing in the

claims. In the final analysis under § 101, the claimed invention, as a whole, must be evaluated

for what it is.") (quoted with approval in Abele, 684 F.2d at 907, 214 USPQ at 687). See also In

re Johnson, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978) ("form of the claim is often

an exercise in drafting"). Thus, nonstatutory music is not a computer component and it does not

become statutory by merely recording it on a compact disk. Protection for this type of work is

provided under the copyright law.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 47-48, 50-56 and 58-72 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Strasnick et al. U.S. Pat. No. 5,861,885 (hereafter Strasnick) in view of DeKimpe et al. U.S.

Patent No. 6,665,682 (hereinafter DeKimpe) and Lokken U.S. Patent No. 6,167,396 (hereinafter

Lokken).

1.   Re Claim 47, 55, 63:

Strasnick teaches a computer graphical user interface system (See the abstract; figure 13; column 6) comprising:

A database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (column 7-8) and display the multi-dimensional hierarchy of data to a user (Figs. 1-7);

A multi-dimensional graphical user interface coupled to the database and capable of user interaction to provide a multi-dimensional user interactive graph (e.g., column 7 and 8) comprising:

A multi-dimensional axes data hierarchy (*e.g., figures 1-7; column 1, 6-7 and 16*) including a top layer hierarchy associated with a first axis dimension (*e.g., departments or departments cells; see column 7-8*), a top layer hierarchy associated with a second axis dimension (*e.g., Figs. 14-18 and column 21-22, for example, the attributes associated with ALL quarters that include the children cells/quarters*); and a unique bottom layer hierarchy (children cells) including a plurality of function values associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy; and a multi-dimensional value hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy (*e.g., in a non-limiting example, cells representing the salespersons' sales and axis has been taught in figures 1-7 and column 1 and 16 wherein the parent member being a department cell in the department level being the parent of all the salespersons cells belonging to the department; column 7-8*); and *the children cells are the salespersons cells belonging to the department; see for example, column 7-8, lines 10-30* and *the children salespersons cells representing the disaggregation of the department cell to which they belong. Strasnick teaches in column 7-8 and 19-22 a user*

selection of a cell representing the company's total sales (a company cell) and all the sub-cells

or children cells representing the departments' sales (the department cells) wherein the

department cells emanate from the company cell and also all the sub-cells or children cells

representing the salespersons' sales (the salesperson cells) wherein the salespersons' cells

emanate from one of the departments' cells. Strasnick teaches warp navigation in which a

navigator warps to the hierarchical dependents or children such as the department cells in the

first level in response to the selection by the navigator from the company cell. Strasnick teaches

warp navigation in which a navigator warps to the departments' cells in the first level in

response to the selection by the navigator from the company cell. Strasnick thus teaches, in

response to the user selection of the departments' cells in the first level for display of

departments' sales data with respect to the x-axis by a warp navigator from the company cell,

display on the graph the departments' sales data or departments' cells in the first level. Strasnick

also teaches warp navigation in which a navigator warps to the salespersons' cells in the second

level in response to the selection by the navigator from one of the departments' cells. Strasnick

discloses, in response to a user selection of the second level for display of salespersons' sales

data with respect to the x-axis from a department cell by the warp navigator, display on the

graph the salespersons' sales data or the salespersons' cells in the second level. Strasnick

further discloses navigation and visualization in the 3D layout space wherein each dimension

has the hierarchical structure of data attributes; see Fig. 7 and 14-18 and column 21-22 wherein

the x-axis and y-axis dimensions are represented by the rows and columns and further the y-axis

dimension has a hierarchical structure of displayed objects similar to the x-axis. The z-axis

dimension is associated with the filter levels and heights that are selectable data objects/blocks).

- Examiner Notes:

- Strasnick discloses hierarchy being displayed on a ground plane of the information with respect to the x-axis and y-axis (See column 1 and 16-17). Strasnick discloses hierarchy being displayed on a ground plane of the information landscape with respect to the x-axis and y-axis wherein the X- axis of every display object is narrowed or expanded. The 2D plane or 3D box upon which the information objects are drawn has the X-dimension and Y-dimension or x-axis and y-axis as clearly taught by Strasnick in column 16-17.

- Strasnick discloses adjusting a width or height of a display of the information objects relative to the viewpoint of the user. Strasnick discloses <u>the x-axis being associated with the x dimension of the sales data</u>, the x dimension or horizontal dimension for the x axis being associated with the sales data hierarchy having the parent levels and children levels displayed in the information landscape with the x-axis and y-axis of sales data for the x dimension or the horizontal dimension (see Figure 5B, column 6-8, 16-17, 20). Therefore, Strasnick reads on the claim limitation of "a first axis being associated with a first dimension of the supply chain data, the first dimension for the first axis being associated with a first predetermined hierarchical arrangement of supply chain data for the first dimension."

It needs to be shown that Strasnick discloses the claim limitation of "a top layer hierarchy associated with a third axis dimension".

In a non-limiting example, Strasnick thus clearly teaches in Fig. 7 and 14 and column 22 a top layer hierarchy (e.g., the product cells such as ALL for all products as the hierarchy is controlled by the display control) associated with a first axis dimension (x-axis) and a top layer hierarchy (ALL for a total of the first quarter, second quarter, third quarter and fourth quarter of Sales data and the hierarchy is controlled by the display control; see column 22, lines 10-67; see also column 16, lines 45-67 for the displayed objects along the y-axis dimension wherein the displayed objects in the y-axis dimension are in the hierarchical structure) associated with a second axis dimension (y-axis). Strasnick clearly discloses in Fig. 14 a three-dimensional hierarchy of data structures in which the data objects are navigated and visualized in the three-dimensional layout. Moreover, Strasnick discloses in column 21, lines 30-40 a hierarchical tree structure of nodes in a 3D layout of the nodes/cells or data attributes in a hierarchy wherein the nodes/cells/attributes of the hierarchical tree are distributed/mapped to the coordinates in the 3D space and thus graphical structure has a top layer hierarchy associated with the x-axis in the 3D space, a top layer hierarchy associated with the y-axis in the 3D space and a top layer hierarchy associated with the z-axis in the 3D space (See Figs. 14-18).

Strasnick thus strongly suggests the claim limitation of a top layear hierarchy associated with a third axis dimension (See Fig. 10A, 12A and 14-18).

DeKimpe teaches the claim limitation of "a top layer hierarchy associated with a third axis dimension." See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated total for a parent member**. Children may themselves be consolidated levels,

which requires that they have children. A member may be a child for more than one parent, and a

child's multiple parents may not necessarily be at the same hierarchical level, allowing multiple

hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a**

specific analytical technique whereby **the user navigate among levels of data ranging from**

the most summarized to the most detailed. The drilling paths may be defined by the

hierarchies within dimensions or other relationships that may be dynamic within or between

dimensions. For example, when viewing data for Sales 324 for the year 1997 304 in Fig. 3, **a**

drill-down operation in the Time dimension 302 would then display members Q1 366, Q2 308,

Q3 310 and Q4 312.

DeKimpe discloses that in Fig. 3, there is a cube in three-dimensional space with each

dimension represented by an axis of the cube and the intersection of the dimension members are

represented by cells in the multi-dimensional database.

In column 6, especially, column 6, lines 53-61, it is stated, "Drilling down or

up is a specific analytical technique whereby the user navigates among levels of

data ranging from the most summarized (up) to the most detailed (down). The

drilling paths may be defined by the hierarchies within dimensions or other

relationships that may be dynamic within or between dimensions. For example,

when viewing data for Sales 334 for the year 1997 304 in FIG. 3, a drill-down

operation in the Time dimension 302 would then display members Q1 366, Q2

308, Q3 310, and Q4 312."

DeKimpe discloses the drilling paths may be defined by the hierarchies within dimensions. Having the hierarchies within dimensions means that there is a top layer hierarchy for every dimension (axis) and therefore, there is a top layer level/hierarchy associated with a third axis dimension. The cube of DeKimpe is only an example of the graphical representation of the hierarchical data structures. DeKimpe teaches in column 6 that any dimension of the three-dimensional hierarchical data has levels of data ranging from the most summarized (up) to the most detailed (down) wherein drilling paths may be defined by the hierarchies within dimensions.

DeKimpe not only discloses the hierarchies within dimensions but also discloses the graphical user interface allowing a user to navigate among levels of data ranging from the most summarized (up) to the most detailed (down).

In column 6 lines 21-52, DeKimpe discloses an example of the graphical representation of the three-dimensional array of hierarchical data. It is stated, "The cube is three dimensional, with each dimension (i.e., Time, Product, and Measures) represented by an axis of the cube...Cubes generally have hierarchies or formula-based relationships of data within each dimension (axis). Consolidation involves computing all of these data relationships for one or more dimensions. An example of consolidation is adding up all sales in the first quarter. While such relationships are normally summations, any type of computational relationship or formula might be defined. Members of a dimension are included in a calculation to produce a consolidated total for a parent member. Children may themselves be consolidated levels, which requires that they have children." Thus, DeKimpe discloses the multi-dimensional axes data hierarchy.

DeKimpe thus discloses a computer graphical user interface system (Fig. 3) comprising:

A database (*DeKimpe Fig. 2 and column 6 wherein Fig. 2 discloses a multi-dimensional database*) operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (*Fig. 3 and column 6 and Fig. 2 discloses hierarchically organized data associated with a multi-dimensional hierarchy of data*) and display the multi-dimensional hierarchy of data to a user (*Fig. 3 and column 6 and Fig. 2 discloses displaying the hierarchically organized data associated with a multi-dimensional hierarchy of data*); and

A multi-dimensional graphical user interface (Fig. 3 and column 6 discloses a graphical user interface for drilling down or up the multi-levels of the data structures) coupled to the database and capable of user interaction to provide a multi-dimensional user interactive graph comprising:

A multi-dimensional axes data hierarchy (Fig. 3 and column 6) including a top layer hierarchy (e.g., the ALL product item is a parent of the children products A, B, C) associated with a first axis dimension, a top layer hierarchy (e.g., the YEAR 1997 is the parent of its children Q1, Q2, Q3 and Q4) associated with a second axis dimension, and a top layer hierarchy (e.g., Measures is the parent of its children profits, costs and sales) associated with a third axis dimension; and a unique bottom layer hierarchy including a plurality of function values associated with each of the top layer hierarchies of the multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have hierarchies of data within each dimension. Members of a dimension are included in a calculation to produce **a consolidated**

total for a parent member. Children may themselves be consolidated levels, which requires
that they have children. A member may be a child for more than one parent, and a child's
multiple parents may not necessarily be at the same hierarchical level, allowing multiple
hierarchical aggregations within any dimension (DeKimpe column 6). **Drilling down or up is a
specific analytical technique** whereby **the user navigate among levels of data ranging from
the most summarized to the most detailed**. The drilling paths may be defined by the
hierarchies within dimensions or other relationships that may be dynamic within or between
dimensions); and

A multi-dimensional value hierarchy associated with each of the function values of the
multi-dimensional axes data hierarchy (See DeKimpe Figs. 2 and 3; and column 6 wherein
DeKimpe discloses cells in the multi-dimensional database along all dimensions and cubes have
hierarchies of data within each dimension. Members of a dimension are included in a calculation
to produce **a consolidated total for a parent member**. Children may themselves be
consolidated levels, which requires that they have children. A member may be a child for more
than one parent, and a child's multiple parents may not necessarily be at the same hierarchical
level, allowing multiple hierarchical aggregations within any dimension (DeKimpe column 6).
Drilling down or up is a specific analytical technique whereby **the user navigate among
levels of data ranging from the most summarized to the most detailed**. The drilling paths
may be defined by the hierarchies within dimensions or other relationships that may be dynamic
within or between dimensions).

In addition to the graphical representation of the multi-dimensional hierarchical data
structure in DeKimpe column 6 and Fig. 3, further examples of the multi-dimensional hierarchies

can be found in Lokken's OLAP database structure and the graphical representation for multi-level hierarchical data.

Lokken further discloses **a computer graphical user interface system comprising:**

A database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data (*Lokken column 4, lines 21-39*) and display the multi-dimensional hierarchy of data to a user (*Figs. 3-4C and 16-17 or the data cube of column 5*); and

A multi-dimensional graphical user interface coupled to the database (*Lokken column 4, lines 15-20 and column 5, lines 1-10 disclosing the database 300 or the OLAP database 214; Fig. 3-4C and 16-17*) **and capable of user interaction to provide a multi-dimensional user interactive graph** (*Figs. 3-4C and 16-17 or the data cube of column 5*) **comprising: a multi-dimensional axes data hierarchy including a top layer hierarchy associated with a first axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 including the time YEAR or Quarter cells have the children cells such as the Month cells associated with the time dimension*), **a top layer hierarchy associated with a second axis dimension** (*Lokken column 4, lines 60-67 and column 5, lines 1-11; Figs. 3-4C and 16-17 wherein the PRODUCTS line and family cells have children cells such as the Product Items associated with the product dimension*), **and a top layer hierarchy associated with a third axis dimension** (Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17 wherein the Region layer has children cells such as the city, state and country cells associated with the Region dimension); **and a unique bottom layer hierarchy including a plurality of function values** (*e.g., quantitative values in the space cube; see Lokken column 5, lines 1-11; see also Figs. 5-25*) **associated with each of the top layer hierarchies of the multi-**

dimensional axes data hierarchy (_Figs. 3-4C and 16-17_); and a multi-dimensional value hierarchy associated with each of the function values of the multi-dimensional axes data hierarchy (_Lokken column 4, lines 60-67 and column 5, lines 1-11 and Figs. 3-4C and 16-17_).

It would have been obvious to one of the ordinary skill in the art at the time of invention was made to have incorporated DeKimpe (having the Lokken's hierarchical data structure) ecause Strasnick's two dimensional hierarchy and drilling up and down the hierarchical structure can be extended into higher-dimensional hierarchies including the three-dimensional hierarchy in the three-dimensional layout of the hierarchical structures of displayed objects (See Strasnick Figs. 14-18 and column 21-22 and DeKimpe column 6). Moreover, Dekimpe teaches other claim limitations set forth in claim 47 as well including a database operable to store hierarchically organized data associated with a multi-dimensional hierarchy of data and a multi-dimensional graphical user interface (drilling up and drilling down in Fig. 3) interaction to provide a multi-dimensional user interactive graph (cubes or hypercubes in column 6).

Strasnick implicitly discloses hierarchy being displayed on a ground plane of the information landscape with respect to the x-axis and y-axis wherein the X- axis of every display object is narrowed or expanded. The 2D plane or 3D box upon which the information objects are drawn has the X-dimension and Y-dimension or x-axis and y-axis as clearly taught by Strasnick in column 16-17, 21-22 as well as Figs. 14-18. In a non-limiting example, Strasnick discloses adjusting a width or height of a display of the information objects relative to the viewpoint of the user. Strasnick discloses the x-axis being associated with the x dimension of the sales data, the x dimension or horizontal dimension for the x axis being associated with the sales data hierarchy

having the parent levels and children levels displayed in the information landscape with the x-axis and y-axis of sales data for the x dimension or the horizontal dimension (see Strasnick Figure 5B, column 6-8, 16-17, 20). Moreover, Strasnick teaches in column 7-8 and 19-22 a user selection of a cell representing the company's total sales (a company cell) and all the sub-cells or children cells representing the departments' sales (the department cells) wherein the department cells emanate from the company cell and also all the sub-cells or children cells representing the salespersons' sales (the salesperson cells) wherein the salespersons' cells emanate from one of the departments' cells.

Strasnick teaches warp navigation in which a navigator warps to the hierarchical dependents or children such as the department cells in the first level in response to the selection by the navigator from the company cell. Strasnick teaches warp navigation in which a navigator warps to the departments' cells in the first level in response to the selection by the navigator from the company cell. Strasnick thus teaches, in response to the user selection of the departments' cells in the first level for display of departments' sales data with respect to the x-axis by a warp navigator from the company cell, display on the graph the departments' sales data or departments' cells in the first level.

Strasnick also teaches warp navigation in which a navigator warps to the salespersons' cells in the second level in response to the selection by the navigator from one of the departments' cells. Strasnick discloses, in response to a user selection of the second level for display of salespersons' sales data with respect to the x-axis from a department cell by the warp navigator, display on the graph the salespersons' sales data or the salespersons' cells in the second level.

One of the ordinary skill in the art is motivated to have combined the references because

this allows the multiple dimension visual model being used to clearly present the data set to the

user as organized in multiple levels along the multiple axis with each member being labeled as

the database contains a plurality of data records having multiple data attributes/levels that need to

be visualized at a plurality of levels to reveal the details of the hierarchical structure of the data

records (**Strasnick Figs. 14-18, column 21-22, DeKimpe Figs. 2-3 and column 6**).

Re Claims 48, 56, 64:

Strasnick further discloses the claimed limitation of the first dimension comprising a

seller dimension associated with a seller hierarchy (column 6-8); each of the plurality of

members in the first level of the seller hierarchy representing all sellers within a corresponding

geographic region (column 7); and each of the plurality of members in the second level of the

seller hierarchy representing all sellers within a corresponding sub-region of a region represented

by a member in the first level (column 8). Therefore, Strasnick discloses the claim limitation of

"a plurality of levels of hierarchies associated with the top layer hierarchy, and the bottom layer

hierarchy associated with each of the plurality of levels of hierarchies."

Strasnick further discloses the claimed limitation of the first dimension comprising a

product dimension associated with a product hierarchy; each of the plurality of members in the

first level of the product hierarchy representing all products associated with a corresponding

product category; and each of the plurality of members in the second level of the product

hierarchy representing all products associated with a corresponding sub-category of a product

category represented by a member in the first level (column 22).

Strasnick further discloses the claimed limitation of the first dimension comprising a time

dimension associated with a time hierarchy; each of the plurality of members in the first level of

the time hierarchy representing all times with a corresponding time period; and each of the

plurality of members in the second level of the time hierarchy representing all times within a

corresponding sub-period of a time period represented by a member in the first level (column

22).

Strasnick and DeKimpe further disclose the claimed limitation of the graph comprising

three axes, each axis associated with a dimension of the supply chain, each dimension of supply

chain data being associated with a predetermined hierarchical arrangement of supply chain data

for the dimension (e.g., Strasnick figure 1; column 1 and 3; **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick discloses the claim limitation of "a top layer hierarchy associated

with a third axis dimension, and the bottom layer hierarchy associated with the top layer

hierarchy of the third axis dimension."

Re Claims 50-51, 58-59, 65

Strasnick further discloses the claim limitation of displaying a window indicating the

particular member specified in the filter selection, and in response to selection the particular

member displayed in the window, display on the first axis of the graph a graphical representation

of supply chain data for the particular member in addition to the graphical representation of

supply chain data for the other members in the level of the particular member (column 8 and 20).

Strasnick and DeKimpe further disclose the claim limitation of receiving a filter selection

specifying a particular member within a level for which a graphical representation of supply

chain data for the particular member is not to be displayed on the graph; and in response to

receiving the filter selection and selection of a level for display of supply chain data with respect

to the first axis, display on the graph a graphical representation of supply chain data for each

member in the selected level other than the particular member specified in the filter selection

(Strasnick column 8 and 20 and **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "filtering at least a

portion of the plurality of levels of hierarchies and in response the filtered levels of hierarchies

disappear from the multi-dimensional user interactive graph and the multi-dimensional graphical

user interface displays the filtered levels of hierarchies in a separate filtered window."

Strasnick and DeKimpe further disclose the claimed limitation of the GUI operable to, in

response to selection of a particular member of the first level for display of supply chain data

with respect to the first axis, display on the graph a graphical representation of supply chain data

for the selected particular member (Strasnick column 8 and 20 and **DeKimpe Figs. 2-3 and**

column 6).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "the multi-

dimensional graphical user interface allows for a user navigation of the multi-dimensional axes

data hierarchy by drilling into the top layer hierarchies associated with each of the axis

dimensions."

Re Claims 52-54, 60-62, 66:

Strasnick further discloses the claim limitation of displaying a window indicating the particular member specified in the filter selection, and in response to selection the particular member displayed in the window, display on the first axis of the graph a graphical representation of supply chain data for the particular member in addition to the graphical representation of supply chain data for the other members in the level of the particular member (Strasnick column 8 and 20 and Maguire Figs. 2-7).

Therefore, Strasnick and DeKimpe disclose the claim limitation of allowing the function value to be graphed over user selectable aggregations of user input data.

Strasnick and DeKimpe further disclose the claim limitation of receiving a filter selection specifying a particular member within a level for which a graphical representation of supply chain data for the particular member is not to be displayed on the graph; and in response to receiving the filter selection and selection of a level for display of supply chain data with respect to the first axis, display on the graph a graphical representation of supply chain data for each member in the selected level other than the particular member specified in the filter selection (Strasnick column 8 and 20 and **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "filtering at least a portion of the multi-dimensional value hierarchies and in response the filtered value hierarchies disappear from the multi-dimensional user interactive graph and the multi-dimensional graphical user interface displays the filtered value hierarchies in a separate filtered legend window."

Strasnick and DeKimpe further disclose the claimed limitation of the GUI operable to, in response to selection of a particular member of the first level for display of supply chain data with respect to the first axis, display on the graph a graphical representation of supply chain data

for the selected particular member and the mathematical combinations can also be displayed

(Strasnick column 8 and 20; **DeKimpe Figs. 2-3 and column 6**).

Therefore, Strasnick and DeKimpe disclose the claim limitation of "providing for user

interaction of complex mathematical combinations of the multi-dimensional axes data

hierarchy".

Re Claims 67-72:

Strasnick and DeKimpe further disclose the claimed limitation of the GUI operable to, in

response to selection of a particular member of the first level for display of supply chain data

with respect to the first axis, display on the graph a graphical representation of the mathematical

combinations for each of the top layer hierarchies of the multi-dimensional axes data hierarchy

(Strasnick column 8 and 20; **DeKimpe Figs. 2-3 and column 6**).

Lokken further teaches in Figs. 5-27 a first wall graphical user interface grid associated

with a mathematical summarization of the plurality of function values associated with each of the

top layer hierarchies of the multi-dimensional axes data hierarchy and a second wall graphical

user interface grid associated with the mathematical summarization of the plurality of function

values associated with each of the top layer hierarchies of the multi-dimensional axes data

hierarchy.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665.

The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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jcw